EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Institute for Reference Materials and Measurements

# CERTIFIED REFERENCE MATERIAL
# BCR® – 162R

## CERTIFICATE OF ANALYSIS

| SOYA-MAIZE OIL BLEND | | |
|---|---|---|
| Fatty acid | Relative Mass Fraction in g FAME / 100 g total FAME | |
| | Certified value [1)] | Uncertainty [2)] |
| 16:0 (n-hexadecanoic acid) | 10.74 | 0.16 |
| 18:0 (n-octadecanoic acid) | 2.82 | 0.04 |
| 9c-18:1 (n-octadecenoic acid) | 25.4 | 0.4 |
| 9c,12c-18:2 (n-octadecadienoic acid) | 54.13 | 0.25 |
| 9c,12c,15c-18:3 (n-octadecatrienoic acid) | 3.35 | 0.05 |

1) Unweighted mean value, expressed as g of individual fatty acid methyl ester per 100 g total fatty acid methyl ester, of the accepted sets of data obtained in a different laboratory and/or with a different method of determination. Monoenoic and polyunsaturated fatty acids certified correspond to the major isomers identified (oleic acid, linoleic acid and linolenic acid). The values are traceable to methodology applying gas chromatography.
2) Expanded uncertainty with a coverage factor of $k = 2$, according to the Guide for the Expression of Uncertainty in Measurement, corresponding to a level of confidence of about 95 %.

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 100 mg.

Geel, August 2007

**Signed:** 

Prof. Dr. Hendrik Emons
Unit for Reference Materials
EC-JRC-IRMM
Retieseweg 111
2440 Geel, Belgium

## Indicative Values

| Fatty acid | Relative Mass Fraction in g FAME / 100 g total FAME | |
|---|---|---|
| | Indicative value [1] | Uncertainty [2] |
| 18:1 (n-octadecenoic acid) | 26.5 | 0.4 |
| 18:2 (n-octadecadienoic acid) | 54.68 | 0.26 |
| 18:3 (n-octadecatrienoic acid) | 3.80 | 0.06 |

1) Unweighted mean value, expressed as g of individual fatty acid methyl ester per 100 g total fatty acid methyl ester, of the accepted sets of data obtained in a different laboratory and/or with a different method of determination. Monoenoic and polyunsaturated fatty acids include positional and geometrical (i.e. *cis/trans*) isomers. The values are traceable to methodology applying gas chromatography.
2) Expanded uncertainty with a coverage factor of $k = 2$, according to the Guide for the Expression of Uncertainty in Measurement, corresponding to a level of confidence of about 95 %.

## Additional Material Information

| | Relative Mass Fraction in g FAME / 100 g total FAME |
|---|---|
| | Additional information value [1] |
| 14:0 | 0.06 |
| 16:1 | 0.10 |
| 17:0 | 0.08 |
| 17:1 | 0.04 |
| 11c-18:1 | 1.08 |
| 18:2 t[2] | 0.46 |
| 18:3 t[2] | 0.41 |
| 20:0 | 0.38 |
| 20:1 | 0.23 |
| 22:0 | 0.27 |
| 24:0 | 0.15 |

1) Unweighted mean value of the accepted sets of data obtained in a different laboratory and/or with a different method of determination.
2) Includes two *trans* isomers detected.

### DESCRIPTION OF THE SAMPLE

Each BCR-162R unit contains approximately 5.5 g soya-maize oil blend in 10-mL amber ampoule.

### ANALYTICAL METHOD USED FOR CERTIFICATION

The collaborating laboratories applied validated methodologies of their own choice, which in all cases included flame ionisation detection (FID) coupled to a gas chromatography (GC) separation technique. Prior to GC-FID analysis a certain portion of the soya-maize oil blend was transesterified by means of different reagents. A variety of GC columns having different dimensions and stationary phases were employed. The column features in combination with the temperature programs applied, allowed the separation of the fatty acid methyl esters, which were eventually detected by the FID at various temperatures.

## PARTICIPANTS

Bundesforschungsanstalt für Ernährung, Kiel (DE)
Danmarks Fødevareforskning, Søborg (DK)
European Commission, Joint Research Centre, Institute for Reference Materials and Measurements, Geel (BE)
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Mylnefield Research Services Ltd., Dundee (GB)
Stazione Sperimentale per le Industrie degli Oli e dei Grassi, Milano (IT)
Universita' di Bologna, Food Science Department, Bologna (IT)

## SAFETY INFORMATION

The usual laboratory safety precautions apply.

## INSTRUCTIONS FOR USE

The certified value has been assigned to the material "as is", no dry mass correction has been applied. Karl Fischer titration measurements performed in three different units of BCR-162R randomly chosen indicated the presence of water at levels below 0.02 g/100 g.
BCR-162R is intended to be used for method validation and quality control purposes.

## STORAGE

Upon receipt, the material should be stored at a temperature equal to or lower than - 20 ºC.
However, the European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

## LEGAL NOTICE

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**NOTE**
A technical report on the production of BCR®-162R is available on the internet (http://www.irmm.jrc.be).
A paper copy can be obtained from IRMM on request.

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